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Persons Who Failed to Obtain Colorectal Cancer Screening Despite Participation in an Evidence-Based Intervention

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Abstract

Background—In a previous report, we demonstrated the efficacy of an educational intervention focused on increasing colorectal cancer screening rates among African Americans. Despite participating in the intervention, however, nearly two-thirds of participants did not seek and receive screening.

Methods—Participants were African-Americans over age 49 (N= 257) who had not been screened for colorectal cancer according to guidelines. At baseline, participants completed tests measuring fatalism, perceived stress, self-esteem, attitudes/benefits/barriers, social support, and social network diversity. Those who completed the educational intervention were followed up by telephone to learn if they had been screened. We compared the scores on the psychometric tests of the participants who had been screened against the scores of those who had not.

Results—Only the mean scores on the attitudes, benefits, and barriers scale distinguished participants who had been screened from those who had not ($p = 0.0816$ on bivariate testing and $p = 0.0276$ in the logistic regression model).

Conclusion—Social interaction among participants or social cognitive learning may have played a role in determining which participants were screened, but we were not able to demonstrate this. The major factor distinguishing participants who were not screened was their attitude toward screening at baseline.

Impact—There is a subset of African Americans who are persistently resistant to screening, and their perspective in this regard must be addressed if colorectal cancer disparities are to be reduced.

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Keywords

Colorectal cancer; screening; community-based participatory research; social cognitive theory; health disparities

INTRODUCTION

The incidence and mortality rates for colorectal cancer are higher for African Americans than for any other racial or ethnic group. This disparity may be explained, at least in part, by disparities in screening rates. Although overall rates of colorectal cancer screening are similar in blacks and whites, whites are more likely to be screened by endoscopy (69.6% vs 66.1% ever); blacks are more likely to be screened by the less sensitive and specific fecal occult blood test (17.5% vs 14.1% in the most recent 2 years) [1]. Overall, fewer than 70% of both age-eligible blacks and whites have been screened [1], and many of those screened have not been screened on schedule according to guidelines.

Previously, we reported a community intervention trial that used a community-based participatory research approach to demonstrate the efficacy of a culturally-appropriate educational intervention in increasing colorectal cancer screening rates among African Americans [2] and, in a subsequent report, showed its effectiveness in practice [3]. Those who participated in the intervention were twice as likely to pursue and receive screening as those in the control group. Nonetheless, even in the intervention cohort, nearly two-thirds of participants were not screened despite having participated in the intervention.

In this article, we explore psychological and attitudinal factors that potentially distinguished those who pursued and received screening from those who did not. This analysis may facilitate the identification of persons who are particularly resistant to screening and contribute to the development of more effective interventions.

METHODS

The intervention and the methods employed in the community intervention trial were described in a previous publication [2]. The study protocol was reviewed by the Community Coalition Board of the Morehouse School of Medicine Prevention Research Center and was approved after that board's suggestions were incorporated. The study also was approved by the Centers for Disease Control and Prevention and Morehouse School of Medicine Institutional Review Boards. Briefly, 369 age-eligible African-American men and women who had not been screened according to recommended schedules were randomized to one of four cohorts:

- a reduced out-of-pocket expense cohort whose members were reimbursed for any personal expenses incurred in screening
- a one-on-one education cohort whose members met with a health educator in 3 weekly sessions

- a group education cohort whose members met with a health educator in four weekly sessions
- a control cohort whose members received no special intervention

Participants in all four groups were given a brochure on colorectal cancer and screening tests. In addition, all participants were administered a battery of pencil-and-paper psychological and attitudinal tests, described below. The tests were administered at a single sitting over a period of about 30 minutes, with instructions and supervision offered by the health educator who subsequently provided the first intervention session.

We conducted follow-up at 3 months following the intervention and again at 6 months for those who had not been screened at 3 months. We were able to contact 257 participants. The results are shown in Table 1.

The group education intervention was efficacious; the others were not. The participants in this intervention were screened at twice the rate of those in the control cohort. We gave the name EPICS to the intervention: *Educational Program to Increase Colorectal Cancer Screening.* In a subsequent demonstration of the EPICS intervention in public health practice, the rate at which participants were screened post-intervention (37%) was virtually identical to the rate in the community intervention trial [3]. In this project, an additional 35% of participants indicated that they had an appointment for screening or intended to get one.

For the present analysis, mean psychological and attitudinal test scores for persons in the group educational cohort who sought and received screening post-intervention were compared with scores of those who did not. Differences in the means were subjected to t-tests. In addition, a logistic regression model was developed.

The tests included:

1. Fatalism Scale [4]: This 20-item scale conceptualizes fatalism as a set of health beliefs that encompass the dimensions of predetermination, luck, and pessimism. It measures the extent to which the respondent feels that he/she has little control over health outcomes.
2. Perceived Stress Scale: This widely used psychological instrument offers “a measure of the degree to which situations in one’s life are appraised as stressful. Items are designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives” [5].
3. Rosenberg Self-Esteem Scale: For over fifty years, this 10-item instrument, which has been translated into multiple languages, has been widely used to measure self-esteem [6].
4. Attitudes, Benefits, and Barriers Assessment: This 27-item test was constructed by the research team to assess the

perspective of participants on cancer screening. It provided insight on their evaluation of the potential benefits of screening as well as the drawbacks and reasons why they might or might not seek screening.

5. Social Support: To estimate the size of the participants' social network, they were asked (for instance) about the frequency with which they meet or talk to friends and relatives, the number of people they consider friends, and the number of people they see at church or in other group settings. The form included 21 items.

6. Social Network Diversity: This is the number of social roles in which the respondent has regular contact with at least one person. The maximum number of high-contact roles is 12. They are: spouse, parent, child, child-in-law, close relative, close friend, church/temple member, student, employee, neighbor, volunteer, and group member [7].

RESULTS

The test scores of the participants who were screened are compared with those who were not screened at 6 months after completion of the intervention in Table 2. Of the six scales, scores on only one, the Attitudes, Benefits, and Barriers Assessment, approached a difference at a statistically significant level (p=0.0816). In the logistic regression model (Table 3), scores on this scale demonstrated a difference at a statistically significant level (p = 0.0276). There was no evidence that fatalism, perceived stress, or self-esteem was involved in differentiating individuals who sought and received screening after exposure to the intervention from those who did not. Social support, as measured by the number of individuals in the participants' social network, was 25% higher among those who were screened as compared with those who were not. However, with large standard deviations, this finding did not achieve statistical significance. Social network diversity was also greater among screened participants but, again, this was not at a statistically significant level.

DISCUSSION

The original trial of three interventions to promote colorectal cancer screening was designed to address three types of interventions that were listed in the Guide to Community Preventive Services [8] as having "insufficient evidence" to document their effectiveness in promoting colorectal cancer screening. Those three were one-on-one education, group education, and reduced out-of-pocket expense. A more recent review [9] by the Community Preventive Services Task Force – the committee responsible for the Guide's recommendations – found that there was "sufficient evidence" to support one-on-one education, but, for group education and reduced out-of-pocket expense, there was "insufficient evidence."

In the present study, reducing out-of-pocket expense did not increase the rate at which participants were screened, nor did education when provided in a one-on-one setting. However, education in a group setting did result in screening at a rate that was twice that of individuals in the control cohort, who received neither education (except in the form of a brochure) nor financial support. However, even in the group education cohort, nearly two-thirds of participants had not been screened 6 months after the conclusion of the intervention. The next step was to determine what differentiated those who had been screened from those who had not, even though all had participated in the same relatively efficacious intervention.

The hypothesis was that the relative success of group education was the result of social interaction and mutual support among group members. Participants in the group education meetings discussed among themselves the information that had been provided and perhaps encouraged each other to pursue screening. However, other possibilities, such as greater fatalism, stressful life circumstances, lesser self-esteem, or negative attitudes at baseline among those who did not pursue screening could not be ruled out.

The test results suggested a trend in support of the social interaction hypothesis. Although social support, as measured by the size of an individual's social network, was 25% larger among those who had been screened as compared to those who had not, the relatively small sample size and large standard deviation resulted in a finding that was not statistically significant.

Social cognitive theory suggests that teaching and learning takes place best in a group setting as a result of social interaction among the persons in the group [10]. This may explain the finding in the community intervention trial that participants in the group education cohort were most likely to seek and receive screening post-intervention and the finding that those who did seek screening were those with the largest social networks. Nevertheless, none of the psychosocial tests was able to measure directly the effect of social interaction or of social cognition in the group.

There was no evidence that fatalism, stress, or low self-esteem was involved. However, both bivariate and logistic regression analyses identified a positive attitude toward cancer screening at baseline as the most relevant factor differentiating those who obtained screening from those who did not when both were exposed to the same educational intervention.

The prospect of being screened for colorectal cancer is not attractive. There are two major options. The first, the fecal occult blood test (FOBT) or the fecal immunochemical test (FIT) requires that one transfer samples of one's own feces to small cards. The other, colonoscopy, brings to mind an image of being instrumented through the anus. With a small amount of information, one learns that the patient is essentially anesthetized for the procedure but that preparation for the procedure is characterized by induced explosive diarrhea. Hence, it is not surprising that many people harbor a negative attitude toward these tests. The EPICS intervention was designed to improve this attitude and convey an understanding that it is worthwhile to tolerate some minor unpleasantness for the sake of one's health. It appears that participants who had relatively positive attitudes at baseline and relatively great social

support were the ones most likely to absorb the lessons of EPICS and proceed to obtain screening.

In this study, the participants were resisters of colorectal cancer screening. Baseline testing indicated that nearly all were aware that colorectal cancer was treatable and that there was a screening test or tests available. However, when offered the opportunity to be screened at no expense, very few accepted. Relevant education, when presented in a group setting, was persuasive for some – enough to demonstrate the efficacy of the intervention – but only a minority sought and received screening. It is evident that there is a subset of African Americans whose attitude toward screening is persistently negative. This attitude must be softened if colorectal cancer disparities are to be reduced and eventually eliminated.

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Table 1

Results of a Community Intervention Trial of Colorectal Cancer Screening

Cohort	No. of Participants Contacted	No. Screened for Colon Cancer	% Screened	p Value (Intervention vs. control)
Control	62	11	17.7	
Reduced out-of- pocket expense	63	14	22.2	NS
One-on-one education	67	17	25.4	NS
Group education	65	22	33.9	0.039
Total	257	64	24.7	

NS indicates not significant

Table 2

Mean Test Scores for Participants in a Colorectal Cancer Screening Intervention

Test	Mean Score (SD) for Screened Participants	Mean Score (SD) for Participants Not Screened	p-Value
Fatalism Scale	4.5 (3.6)	5.0 (4.4)	0.5893
Attitudes, Barriers, and Beliefs Scale	19.0 (3.5)	16.9 (4.8)	0.0816
Rosenberg Self-Esteem Scale	32.5 (4.0)	31.8 (5.2)	0.6124
Perceived Stress Scale	17.8 (6.6)	18.7 (8.0)	0.7126
Social Support Scale	30.1 (14.7)	25.3 (15.5)	0.2380
Social Network Diversity Scale	6.6 (1.7)	6.0 (1.8)	0.2097

Table 3

Logistic Regression Model for Participants in a Colorectal Cancer Screening Intervention

Variable	OR	95% Confidence Interval		P-value
		Lower	Upper	
Group	1.168	0.847	1.611	0.3437
Fatalism Scale	1.074	0.965	1.196	0.1883
Attitudes, Barriers, and Beliefs Scale	1.121	1.013	1.242	0.0276
Rosenberg Self-Esteem Scale	1.002	0.925	1.087	0.9523
Social Support Scale	1.004	0.986	1.021	0.6718
Social Network Diversity Scale	1.009	0.814	1.249	0.9364